

ABSTRACT OF THE DISCLOSURE

A phase change memory device, and method of making the same, that includes contact holes formed in insulation material that extend down to and exposes source regions for adjacent FET transistors. Spacer material is disposed in the holes with surfaces that define openings each having a width that narrows along a depth of the opening. Lower electrodes are disposed in the holes. A layer of phase change material is disposed along the spacer material surfaces and along at least a portion of the lower electrodes. Upper electrodes are formed in the openings and on the phase change material layer. Voids are formed into the spacer material to impede heat from the phase change material from conducting through the insulation material. For each contact hole, the upper electrode and phase change material layer form an electrical current path that narrows in width as the current path approaches the lower electrode.

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